

WHAT IS CLAIMED IS:

1. A cable modem tuner, comprising:
 - a tuner circuit taking and amplifying a signal corresponding to a reception channel from input signals, and converting to an intermediate frequency signal of a first frequency band; and
 - 5 a down converter circuit receiving the intermediate frequency signal of said first frequency band from said tuner circuit, and selectively outputting an intermediate frequency signal of said first frequency band or a second frequency band lower than said first frequency band; wherein
said down converter circuit includes
 - 10 a local oscillation circuit generating an oscillation signal corresponding to said second frequency band in a first mode in which the intermediate frequency signal of said second frequency band is output, and stopping generation of said oscillation signal in a second mode in which the intermediate frequency signal of said first frequency band is output,
 - 15 a mixer circuit for mixing the intermediate frequency signals of said first frequency band input to said down converter circuit with an output of said local oscillation circuit, and
a filter circuit receiving an output signal from said mixer circuit and passing a signal of a frequency corresponding to a set cut off frequency.
2. The cable modem tuner according to claim 1, wherein
said tuner circuit includes a first automatic gain control circuit for adjusting amplitude of a signal corresponding to said reception channel to a prescribed level,
- 5 said tuner further comprising
a second automatic gain control circuit provided between said tuner circuit and said down converter circuit, for adjusting amplitude of the intermediate frequency signal of said first frequency band to a prescribed level.
3. The cable modem tuner according to claim 2, wherein total gain

attained by said first and second automatic gain control circuits is at least 55dB.

4. The cable modem tuner according to claim 1, wherein
said tuner circuit and said down converter circuit output signals of
non-parallel type, said cable modem tuner further comprising
a signal converting circuit receiving an output of said down
5 converter and converting to a parallel type signal.

5. The cable modem tuner according to claim 1, wherein
said mixer circuit amplifies the intermediate frequency signal of said
first frequency band in said second mode.

6. The cable modem tuner according to claim 1, wherein
said local oscillation circuit includes
an oscillation element oscillating at said second frequency band,
a first bipolar transistor receiving at an input electrode an output of
5 said oscillation element,
a first bias resistance coupled between the input electrode of said
first transistor and a first voltage node; and
a second bias resistance connected between an output electrode of
said first bipolar transistor and a ground node; and
10 said mixer circuit includes
a second bipolar transistor connected to said first voltage node, and
receiving at an input electrode an output of said oscillation element and the
intermediate frequency signal of said first frequency band, and
a third bias resistance connected between the input electrode of said
15 second bipolar transistor and a second voltage node supplying a voltage
higher than said first voltage node.

7. The cable modem tuner according to claim 6, wherein
said local oscillation circuit includes a switch element of which on/off
is instructed externally, connected parallel to said oscillation element,

5 said switch element turning on/off in said first and second modes,
respectively.

8. The cable modem tuner according to claim 6, wherein
said filter circuit and said bias resistance are mounted on one
surface of a printed board, and

5 said down converter circuit except for said second bias resistance is
mounted on the other surface of the printed board.

9. The cable modem tuner according to claim 1, wherein
5 said cut off frequency is set such that the signal of said second
frequency band is passed and the signal of said first frequency band is
attenuated in said first mode, and that the signals of said first and second
frequency bands are passed in said second mode.

10. The cable modem tuner according to claim 9, wherein
said filter circuit has
an inductance element passing an output signal of said mixer circuit,
a first capacitance element coupled between said induction element
and the ground node, a second capacitance element coupled in parallel with
5 said induction element, and
a switch element provided parallel to said second capacitance
element and of which on/off is instructed externally,
said switch element being turned off/on in said first and second
modes, respectively.

11. The cable modem tuner according to claim 1, further
comprising:

5 an intermediate frequency automatic gain control circuit positioned
between said tuner circuit and said down converter circuit adjusting
amplitude of the intermediate frequency signal of said first frequency band
to a prescribed range; and
a signal converting circuit receiving an output of said down

converter circuit and converting to a parallel type signal; wherein
said cut off frequency is set such that the signal of said second
frequency band is passed and the signal of said first frequency band is
attenuated in said first mode, and that the signals of said first and second
frequency bands are passed in said second mode.

12. The cable modem tuner according to claim 11, wherein
said tuner circuit, said intermediate frequency automatic gain
control circuit, said down converter circuit and said signal converting circuit
are contained in one box.

13. The cable modem tuner according to claim 1, further
comprising:

an upstream circuit for transmitting a data signal to a cable
television station; and

5 a high pass filter for introducing a multiwave down signal from said
cable television station while removing said data signal.

14. The cable modem tuner according to claim 13, wherein
said upstream circuit includes
a variable gain amplifying circuit amplifying the data signal to said
CATV station with a prescribed gain, and

5 a coupling circuit coupling an output of said amplifying circuit to an
input of said high pass filter.

15. The cable modem tuner according to claim 13, wherein
a down data signal of a band different from said multiwave down
signal is input from said CATV station to said receiving circuit through a
cable, and

5 said receiving circuit includes a branching circuit branching and
outputting said down data signal.

16. The cable modem tuner according to claim 13, wherein

said upstream circuit, said tuner, said high pass filter and said down converter are contained in a shield case partitioned individually.